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1: **Diabetologia**. 2005 Jun;48(6):1207-15. Epub 2005 Apr 30.

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FULL-TEXT ARTICLE

Alterations of lipids and apolipoprotein CIII in very low density lipoprotein subspecies in type 2 diabetes.

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AIMS/HYPOTHESIS: Very low density lipoprotein (VLDL) particles are heterogeneous, comprising two main subspecies, VLDL 1 (S_f 60-400) and VLDL 2 (S_f 20-60). The aim of the study was to examine the distribution and composition of VLDL subspecies in type 2 diabetes. **SUBJECTS, MATERIALS AND METHODS:** We studied the composition and concentration of triglyceride-rich lipoproteins (TRLs) in 217 type 2 diabetic patients and 93 control subjects between 50 and 75 years of age. Lipoprotein subspecies were separated by density-gradient ultracentrifugation. Apolipoprotein (apo) CIII and apo E in plasma and apo CIII in TRL subspecies were measured by nephelometry and apo CII in serum by a commercial kit using a single radial immunodiffusion method. **RESULTS:** The concentrations of VLDL 1, VLDL 2 and intermediate density lipoprotein were significantly increased in type 2 diabetes subjects, the change being most marked for VLDL 1. There was a strong linear correlation between VLDL 1 triglycerides and plasma triglycerides in both groups ($r = 0.879$, $p < 0.001$ and $r = 0.899$, $p < 0.001$). Diabetic subjects had markedly higher plasma ratios of apo CII:apo CIII and apo CIII:apo E. Despite elevated plasma apo CIII, type 2 diabetic subjects had a relative deficiency of apo CIII in all TRL subspecies, suggesting profound disturbances of apo CIII metabolism.

CONCLUSIONS/INTERPRETATION: The elevation of VLDL 1 triglycerides is the major determinant of plasma triglyceride concentration in normal subjects and in type 2 diabetic individuals. Both apo CIII and apo E metabolism are disturbed in type 2 diabetes.

PMID: 15864534 [PubMed - indexed for MEDLINE]

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